Guidance for Preparers of
Cumulative Impact Assessments

Defining Resource Study Areas

Steps for Cumulative Impacts Analysis

1. Identify resources to consider in the cumulative impact analysis.
2. ***Define the study area for each resource.***
3. Describe the current health and historical context for each resource.
4. Identify direct and indirect impacts of the proposed project that might contribute to a cumulative impact.
5. Identify other reasonably foreseeable actions that affect each resource.
6. Assess potential cumulative impacts.
7. Report the results.
8. Assess the need for mitigation.

Introduction

A Resource Study Area (RSA) is the geographic area within which impacts on a particular resource are analyzed. Therefore, a separate RSA should be identified for each resource of concern included in the cumulative impacts analysis. This paper contains advice to help Caltrans planners define appropriate RSAs for a cumulative impacts analysis. Guidance in this issue paper includes the following:

- Practical strategies for delineating RSA boundaries;
- Factors to consider when identifying the RSA for a specific resource;
- How to define the RSA for an individual resource; and
- Examples of RSAs that have been identified for individual resources.

Establishing RSA boundaries is usually the second step in the analytical process. Each RSA should be established to address all of the actions that may contribute to cumulative impacts, in addition to the project effects.

The boundaries of RSAs for cumulative impacts analysis are often broader than the boundaries used for the project-specific analysis, which focuses on the immediate project area. For example, a project study area for a small bridge replacement may include the footprint of the bridge and a 1-mile radius around the footprint to cover resources potentially affected by the proposed action. However, for a cumulative impacts analysis, the boundary must extend to include other resources affected by the combined impacts of the proposed project and other actions.

The RSAs established for a cumulative impacts analysis are likely to vary by resource, as shown in Figure A. For example, the appropriate RSA for air quality might be an air basin defined by the California Air Resources Board, whereas the RSA for water resources may be a river basin or watershed.

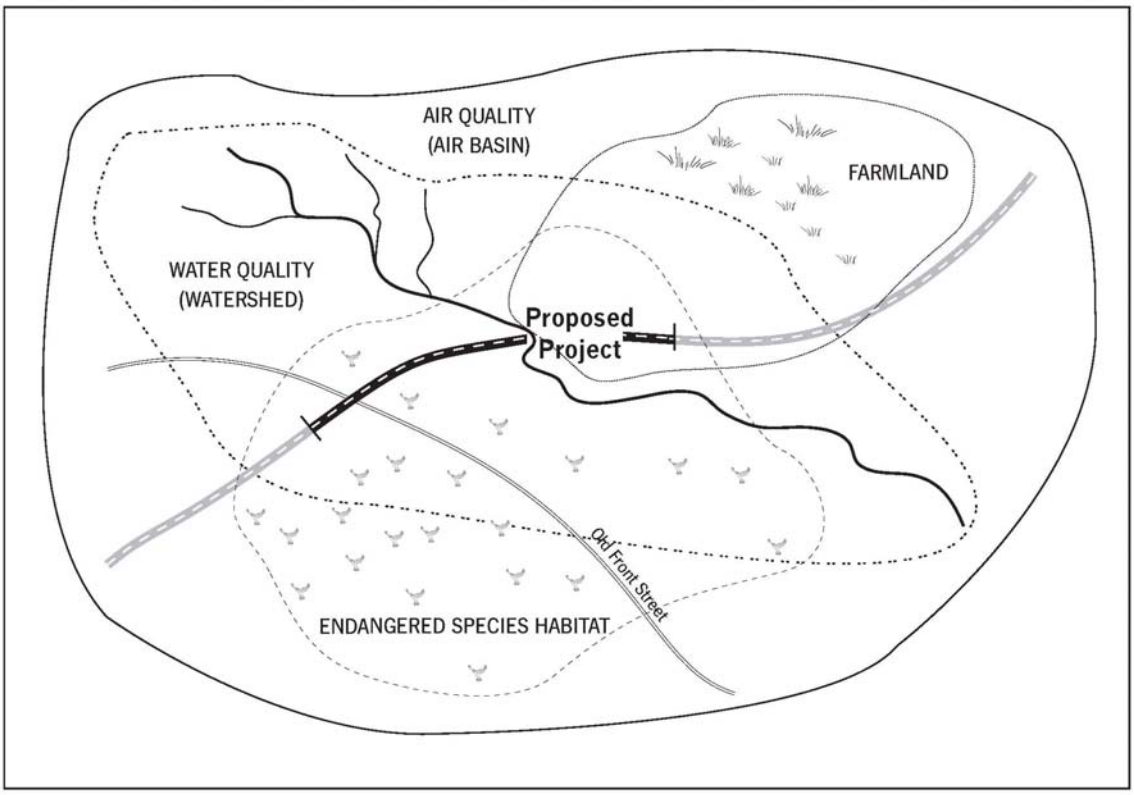

Figure A – Resource Study Areas

Once an RSA is identified, it will help you to identify data needs and determine which past, present, and reasonably foreseeable projects should be included in the cumulative impacts analysis. As you define each RSA for the analysis, ask peers and resource specialists to review the boundaries and the approach used to define them. By making sure that RSAs are properly defined for each affected resource, you can ensure that your analysis will be conducted with the appropriate level of effort.

Define RSAs during Scoping

Use the scoping process to identify RSA boundaries. Public agency representatives and citizens can provide valuable input.

Practical Strategies

Consider the practical strategies below when delineating RSA boundaries:

- Take advantage of the NEPA/CEQA scoping process to help you identify RSA boundaries. Public and agency representatives who participate in this process can provide valuable input. Ask scoping participants to help you identify boundaries for the resources that are being addressed. Review the scoping notes to get ideas about how

best to establish RSA boundaries. (Refer to the Data Gathering issue paper, and specifically the discussion entitled "Tap Internal Data Sources.")

- Consult with Caltrans resource specialists (e.g., biologists, archaeologists, etc.) to help identify appropriate RSA boundaries based on their working knowledge of resources and regulatory. mandates. (Refer to the Data Gathering issue paper, and specifically the discussion entitled "Tap Internal Data Sources.")
- Identify the boundaries that were previously established for a resource in the project-specific analysis. Although different from an RSA, the area included in the project-specific analysis could provide the basis from which to delineate the RSA. For example, review the Natural Environment Study (NES) to determine established boundaries for a wetlands complex that has the potential to be affected. Caltrans resource specialists and local stakeholders who have a very specific understanding of the area should confirm the boundaries previously established in the NES. If possible, consult the individuals who initially established the boundaries for verification and to gain an understanding of the rationale behind the delineation of the boundaries. Then expand on this project-specific boundary in a logical manner using the resources you have consulted to create the RSA. (Refer to the Data Gathering issue paper, and specifically the discussion entitled "Tap Internal Data Sources.")
- Refine RSA boundaries, as needed, for each affected resource. Ensure that all actions that may contribute to cumulative impacts on a resource within the RSA area are included in the cumulative impacts analysis.

Factors to Consider

"Right-Size" the RSA

Identifying the right size of each RSA

An optimally sized RSA is one that is large enough to capture the dynamics of the resource, but small enough to facilitate data gathering.

In drawing the RSA boundaries, identify a boundary that is large enough to provide the context necessary for understanding the health of the resource and compact enough to present a proper perspective.

An optimally sized RSA is one that is large enough to capture the dynamics of the resource to identify cumulative effects. If the RSA is too small, you may run the risk of omitting projects that could contribute to cumulative effects to the resource. An undersized RSA might also provide a false picture of the health of the resource. Within the undersized RSA, the resource may appear to be healthy from a local perspective, but the resource may actually be part of a deteriorating system.

On the other hand, an oversized RSA will make data gathering more difficult or lead to an incorrect conclusion by suggesting that the resource is more plentiful or in better health than would a more focused RSA boundary. For example, a study area large enough to provide context for water quality impacts (e.g., an entire watershed) could prove to be excessively large for another resource, such as historic buildings. Because multiple communities could lie within the larger area represented by the watershed, the RSA could lead to a false impression of the trend for restoration or preservation of historic buildings.

Use Caution when Selecting Political Boundaries

Political boundaries are often arbitrary; they are not likely to represent development trends nor do they identify habitat areas. Demographic characteristics and development trends in urban and suburban areas may extend beyond an individual municipality into surrounding communities. Natural resources are not typically well understood in the context of city or county limit lines. In most cases, a political boundary is only applicable when it matches the geography of an affected resource or community.

Consider the Distance an Effect Can Travel

To determine the appropriate geographic boundary for cumulative effects on a particular resource, think about how far an effect can travel. For example, watercourse sedimentation from construction activities can travel long distances downstream, while the impact of construction-period vibration is typically restricted to nearby development.

Defining an Individual RSA

Table 1 presents some suggestions for defining RSAs; it does not include the full range of possible RSA types that could require analysis.

Table 1. Resource Study Area Examples

Resource	Resource Study Area	Discussion
Land Use	Community, metropolitan area, county, sphere of influence	Consult city and county planning agencies and regional councils of government (COGs) for assistance in establishing land use boundaries.
Air Quality	Metropolitan area, air basin	In most cases, the air quality study will contain boundaries for this resource.
Wetlands and Water Quality	Stream, watershed, river basin, estuary, aquifer, wetlands complexes, or parts thereof	Identify drainage basins or subbasins in which the project is located. Consult the U.S. Army Corps of Engineers, county water agencies, and flood control districts for assistance in delineating wetlands and/or water quality boundaries. Consult the State Water Quality Control Board (SWQCB) and the EPA 303(d) TMDL list to identify impaired waters and the reasons why they are impaired.
Plant Species	Watershed, forest, range, or ecosystem	Ask botanists specializing in particular species for assistance in defining reasonable RSAs.
Animal Species (Resident Wildlife)	Species habitat or ecosystem, subpopulation boundaries	Ask biologists specializing in particular species for assistance in defining reasonable RSAs. Critical habitat designations under the Endangered Species Act and information provided in the Natural Environmental Study (NES) and biological assessment for your project will indicate the range of individual species and populations, and provide a general study area.
Animal Species (Migratory Wildlife)	Breeding grounds, migration routes, wintering areas, and subpopulation boundaries	Ask biologists specializing in particular migratory species for assistance in defining reasonable RSAs. Information provided in the NES for your project will indicate the range of individual species and populations, and provide a general study area.
Fish/Marine Life	Stream, river basin, estuary, or parts thereof; spawning areas and migration routes	Ask biologists specializing in particular species for assistance in defining reasonable RSAs. Information provided in the NES for your project will indicate the range of individual species and populations, and provide a general study area.
Cultural Resources	Existing and potential historic districts, traditional cultural properties and known sacred sites, ethnographic and present tribal territory	Project-specific historic and archaeological resource analyses typically define the geographic context for historical resources, which are typically beyond the boundaries of the project footprint. Consult the historic property survey report and cultural resource professionals for assistance in establishing boundaries for cultural resources.
Community	Community, metropolitan area, county, multi-county area, neighborhood, distribution of low-income or minority populations, census tract or subtract	Consult city and county planning agencies and community-based organizations, such as community development organizations and rural development corporations. Analyze U.S. Census data for the distribution of environmental justice populations.
Traffic/Transportation	Transportation network for a city or community, corridor, “commute shed” boundary, or traffic zones	Consult the traffic study. For projects in which travel demand models have been developed, the model will typically define the RSA.

Sources

Council on Environmental Quality. 1997. Considering Cumulative Effects under the National Environmental Policy Act, Chapter 2, Table 2-2.

California Department of Transportation. 2003. Standard Environmental Reference, Forms, and Templates: Annotated IS/EA Outline.